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ABSTRACT

A study explored research data to see if evidence exists to support the assumption by adult educators that adults learn differently than children. Educational Resources Information Center (ERIC) documents, educational and psychological periodicals, and other resources were reviewed. It was discovered that most adult educators have dealt with non-cognitive rather than cognitive aspects of learning. Learning research was classified into two categories: philosophical/practitioner and empirical. In the first category the work of Edward C. Lindeman, Malcolm S. Knowles, J. Roby Kidd, and others was examined; in the empirical category the work of Allen Tough, E. L. Thorndike, Jean Piaget, and others was explored. The research review revealed (1) that there were discrete philosophical/practitioner and empirical categories with little effort to reconcile data from both viewpoints, and (2) that there was no serious examination of the question of whether adults learn differently than children. Adult educators assumed the differences and other educators and researchers did not consider them. It was hypothesized that the learning process gradually changes over the full range of the life cycle of an individual. Existing learning research data needs to be reanalyzed to discover if learning patterns exist as an individual moves through the life cycle. (CSS)

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Adults Learn Differently Than Children
An Examination of an Old Basic Assumption

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October 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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This is a report of a project funded by a grant from the University of Mid-America (UMA), The National Institute of Education (NIE), and the College of Education, Kansas State University.

Preface

"To risk is to loosen your grip on the known and the certain and to reach for something you are not entirely sure of but you believe is better than what you now have, or is at least necessary to survive. Taking a risk is central to everything worthwhile in life." (Viscott, 1977, p. 17).

As a general rule, asking hard questions, those which others have avoided or those that have no easy answers, always involves personal and professsional risk. This research project is no exception. From its inception, it was apparent that the results could be disconcerting to some and could raise more questions and problems than it solves. But I didn't expect the results to be so strong.

Over the years, I have had students who were elementary and secondary school teachers. They argued convincingly that adults did not learn differently than children. Other students argued they did. As a result, for sometime I have been raising questions about the difference between child and adult learning. It may have been my naivete, but I had fully anticipated that if I conducted a systematic search of the literature, I would find significant evidence that would demonstrate that children and adults do indeed learn differently. This has not been the case. I have not found the evidence.

This is a report of what I found. It raises more questions than answers. These questions need the critical attention of students, professionals, practitioners, and researchers. All I ask is that you read carefully and responsibly. Then I urge you to add your ideas and research efforts to help resolve this issue. It is one that could revolutionize the profession of adult education, indeed, all of education.

Jerry Parsons
Project Director

September 1978

INTRODUCTION

Do adults learn differently than children? Adult educators thinks so and as a result have developed a series of adult education practices. These practices emphasize the uniqueness of the way adults learn.

An analysis of the teaching-learning practices advocated by adults and teachers of children reveals that they are often using the same methods and approaches to learning. In fact, it is difficult sometimes to recognize differences in their basic assumption about learning. Many elementary school teachers, just like adult educators, make every effort to determine the knowledge level of the learners and then begin the learning experience at that point. After all, if the child can't read at the 4th grade level why start with the 5th grade book. ABE teachers determine at what level the adult reads and proceed helping him read at his level. The County Extension Home Economists who teach clothing construction identify the experience of their learners and start at that point. Numerous other illustrations could be cited.

Adult educators have accepted as a basic assumption that adults do learn differently. This study was designed to explore available research data to see if evidence exists to support this assumption. If data are available to support this assumption then adult educators can with more strength advocate their position. If there is not a difference in the way adults and children learn then a whole new orientation to adult and other facets of education is needed.

Learning

One of the first problems in this type of research is the lack of precision in the definition of learning. Each writer has his own definition; most are succinctly stated, some are like poetry in their charm, but only a very few are measurable. Learning is not easily defined since it touches every aspect of life. The pervasiveness of learning is evident when Edward Lindeman says:

> . . . learning becomes an integral part of living until finally the old distinction between life and education disappears. In short, life itself becomes a perpetual experience of learning.

and William Kilpatrick says:

> I learn what I learn as I accept it. I learn it to the degree that I count it important to me, and in the degree that I understand it and can fit it in with what I already know. And what I learn I build at once into character--that, in fact, is what to learn means. (Kidd, 1973, p. 153-154)

The common denominator in most definitions of learning is change--but what changes? Change is learning, or the evidence of learning. The change is either in outward behavior or within the individual.

Botwinick (p. 48)makes just such distinction when he says that any analysis of learning must include both the internal process and the external act. He believes we cannot observe learning but instead we infer learning from our observation of an act. Furthermore, he emphasizes that what may have happened is that instead of learning, the non-cognitive factors may have improved. For example, we teach a learner soccer and his game improves. What may have happened is that his physical health (a non-cognitive factor) may have improved thereby permitting the soccer player to improve his performance.

These non-cognitive elements are difficult to separate from the learning process. Practically there is no real need to make the distinction between performance and the internal process. However, conceptually, this distinction is important. As Botwinick said, "Cognitive and non-cognitive processes, while functionally bound together, are different, and theoretically at least not necessarily correlated" (p. 50). If we are to expand our ability to more effectively deal with learning, we must make the distinction between cognitive and non-cognitive factors.

Basically only a few adult educators have dealt with the learning process. Instead they have focused on the non-cognitive factors related to learning.

With the problems in defining learning and the separation of factors

related to learning, it is not surprising that there is very little empirical research dealing with adult and child learning. If you compare the learning of children and adults, what change do you measure, and how do you measure it? Since adults and children differ in their experience, can change in behavior be equated? Would the same learning result in the same change? Are there degrees of change, and how are they measured? If change is measured with a test, what test can be used that does not give one age group an advantage?

Methodology

The aim of this research project, financed by the University of Mid-America and the College of Education at Kansas State University, was to identify research comparing adult and child learning. Although there are a number of significant studies related to changes in learning at the older end of the life cycle this study only looked at data related to differences between adult and child learning.

Educational Resources Informational Center (ERIC) was accepted as a primary source. Several graduate assistants helped the principal investigator with the identification and review of studies. A computer search in areas related to learning in adults going back to 1970 but with emphasis on work after 1972 was made. Bibliographies on these listings led to additional sources and to research done prior to 1970.

Current educational and psychological periodicals plus doctoral dissertations and masters' theses were also reviewed. The Farrell Library Card Catalog at Kansas State University was checked for 'landmark' literature and for all works published in 1973 or later in adult education literature.

There are limitations to this project that must be recognized. Not all research is reported to ERIC and some that was reported may have been overlooked or misjudged. The time allocated for the project was not adequate to find all the sources of data, let alone interpret the data. As a result, although we

would have preferred to use only primary sources we found it necessary to rely upon the interpretation of other writers. For example, Bischoff cited 1017 references in his second edition of Adult Psychology with 22.3% being 1973 or more recent. In the time allocated for this project it was necessary to rely upon his report of these studies.

WHAT THE RESEARCH SHOWS

In reading and analyzing research related to learning one is painfully aware that the research lacks systematization and more importantly an overarching theoretical framework. There is no 'grand scheme', or discernable framework which enables researchers to concentrate their efforts so they can fill in missing gaps in the knowledge about learning. As a result the data often interwines rather than unravels the problem. Individual researchers seem to follow their own special interests. Some researchers do concentrate in a specific area and in these cases, elaborate or extend their own work and that of other researchers. In general, the research is diverse, limited in scope and, deals with such unrelated questions, that it is difficult, if not impossible, to draw conclusions.

Another problem with learning research is that it has been conducted in laboratory settings because variables can be controlled and measured. Research in this setting often has little resemblance to the real life behavior of adults (Bischoff, p. 162). Frequently the studies, as Birreu (Jarvik, et al, p. 151) said, dealt with minutia which has little significance in the lives of human beings. In many instances the technical research language of the report, especially in the case of psychological research, masked comprehension of the data so that the significance of the findings was not readily apparent. It was difficult to discern whether they could have application in the field of learning.

These problems are even more apparent in the area of adult learning. When an adult education research project explores some aspects of learning it is more than likely an isolated research project that has very little relationship to other studies. When one looks specifically at the relationship of adult and child learning, the data are even more scattered. The most prominent exception is the series of studies growing out of Allen Tough's research on adults'

learning projects. His original work has been replicated and the idea expanded in studies done around the world.

Some research used age-groupings that were arbitrary and chosen for the apparent convenience of the researcher rather than valid age-related similarities of the subjects. The most common analysis was to compare grade school children with college students or older adults. It takes less money to make such comparisons and furthermore the data can be reported and utilized in less time (Zahn, 1967). It is questionable whether college students can be considered as a sample of typical adults. There was wide variation in the age-groupings. Some groups ranged from 5-years to 15-years. One study comparing children and adults used these age groupings: 6-16, 19-45, and 46-72 (Middleton and Davenport). Research indicates few common characteristics could be found for the full age range in these groups. It is recognized that many of these studies were done prior to the time that life cycle research made its impact on the educational scene. It is hoped this criticism will be corrected now that we have evidence that life stages can be more meaningful than arbitrary age grouping.

Categories of Research

Research related to learning can easily be classified into two categories: philosophical/practitioner[1] and empirical[2]. The research reviewed for this project can be classified in one of these two categories. Only occasionally writers attempted to use data from both categories and in these cases they

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[1]The term philosophical/practitioner is used because the literature classified in this category is written by practitioners and is frequently philosophical in nature.

[2]The term empirical is used based on the definition - "relying upon or derviced from observation or experiment" as defined in the 1976 edition of the American Heritage Dictionary of the English Language.

used empirical research data to justify their philosophical/practitioner orientation (for example, Widman). The reverse integration of data does not exist in the research reviewed.

Philosophical/Practitioner

In most cases the research in this category is eclectic and is done by professional adult educators as they seek to find pragmatic solutions to problems relating to the education of adults. This category might be identified as applied research but in reality it is most often simply documentation of practical experiences by adult educators.

Some would criticize this research as lacking rigor, sophistication and sound methodological structure. Not necessarily so - the writers are experienced educators and appear to employ good logic as they describe the phenomenon of adult and child learning. Their work could, however, be strengthened by the more consistent application of historical research techniques and as a result, would be more rigorous and academically sound.

Investigators in this category report what is going on, what works and under what conditions certain practices should be utilized. Generally, they are not concerned about why a practice works or even if it is a part of a larger theoretical framework. It is easy to get the impression learning and the application of knowledge about learning is simply good common sense. This is not all bad because with the lack of more sophisticated data the practitioner must use what is available. After all, the field of adult education has grown and developed on this type of data.

In the area of adult education the names of Lindeman, Overstreet, Knowles, and Kidd are prominent. Edward Lindeman and Harry Overstreet wrote extensively and made other contributions at an early stage in the development of the field. Their work apparently stimulated others to develop the philosophical/practitioner orientation to learning. Knowles (1973) and Kidd (1973) have two of the most widely used books on adult learning.

To gain a full appreciation of the scope of the data in this category of research, it is important to go to some of the early writings in the field of adult education. The Journal of Adult Education, the forerunner of Lifelong Learning: Adult Years is an excellent source of the early literature. Knowles says that in this publication from 1929-1941 you'll find "...the most distinguished body of literature yet produced in the field of adult education" (1978, p. 12). In reviewing this literature it is readily apparent that it was written in a style appropriate for the era and the stage of development of the field of adult education. The language lacks the preciseness of academic literature written by today's educators.

Most of the literature in the philosophical/practitioners area can be traced to Malcolm Knowles and his concept of andragogy and pedagogy. This literature clearly established that adults do learn differently than children. Knowles defines pedagogy as the art and science of teaching children and andragogy as the art and science of helping adults learn. (1970, p. 37-38). His four basic assumptions of andragogy deal with (1) changes in self concept, (2) the role of experience, (3) readiness to learn, (4) orientation to learning. Knowles says:

> "I am not talking about a clear-cut differentiation between children and adults as learners. Rather, I am differentiating between the assumptions about learners that have traditionally been made by those who practice pedagogy in contrast to the assumptions made in andragogy. I believe that the assumptions of andragogy apply to children and youth as they mature, and that they, too, will come to be taught more and more andragogically." [1](Knowles, 1973, p. 43).

In the review of the literature related to adult and child learning examples of practitioner/philosophical research showing explicitly that adults

[1]It is not the interest of this paper to fully review this concept. Readers who are interested in reviewing this concept should consult Knowles' "Adult Learner: Neglected Species, 1973.

and children learn the same, were not found. It is interesting to note that Knowles (1978) says, "...Lindeman did not dichotomize adult versus youth education, but rather adult versus 'conventional' educators...". Furthermore, in an anthology of Lindeman's work no reference is made to the differences between adult and child learning. Lindeman talks about making education more lifelike. He recommends flexible learning programs, teachers as teaching experts, and dynamic teaching-learning methods.

Kidd (1973, p. 11) in the introduction to his new edition of "How Adults Learn" says, "the differences that distinguish the adult learners from the child are considerable and so are the continuities in learning within the life span of an individual."

In reading Kidd's book and reviewing Lindeman's work, the idea that learning is a process that actually changes, throughout the life span gains some credence. It appears as if they are not certain that there is a unique learning process for adults.

Empirical

This category of learning research grows out of the effort by educators to be more scientific about problem identification, research design, data collection, analysis and interpretation of data. Although there is a wide range in the quality of the research, there is an obvious attempt to follow scientific research methodology and the reporting of results are systematic and consistent. Sometimes writers overlooked reporting all the necessary data for comparisons, still it was evident that their goal was scholarly research.

Thorndike is given credit for launching research in the area of adult learning (Knowles, 1978). In 1928, Thorndike demonstrated adults can learn and adults do not loose their ability to learn. In the adult education field, Allen Tough is recognized as having made a significant breakthrough when he

identified self-planned learning projects are the most frequent type of adult learning experiences.

It is Piaget who has offered the most substantial research evidence that adults and children learn differently. He developed the concept of cognitive development as a sequential process. Therefore, all children do not learn alike. Piaget divides cognitive development into three general periods with each period having various sub-divisions. His methods of labeling changed from time to time, but the steps of development are still consistent and sequential, although the time frame may vary widely among individuals (Papalia, et al, p. 425).

The first period is sensorimotor development from birth to age 2. The child learns to differentiate between himself and his environment, to realize the permanance of objects and casual relationships. The second period or sub-period is preoperational thought when the child becomes capable of using symbols for representational thought. This develops into concrete operations when the child can classify and order objects or use numerical operations on them. The final period is formal operations when the child can use abstract hypotheses and deductions. The child has reached adult reasoning capacity, usually between ages 11 and 14.

Piaget gives very little attention to cognitive development in adulthood. In fact he says that the adult years are not a time of meaningful cognitive development (Papalia, et al, p. 424). However, Papalia says there is considerable variability in adult cognitive development.

It is recognized that Piaget's work is not without criticism. Some believe his sample is too small, his data culturally biased, only "left-brained", and his stages of development too rigid. Rose believes "It doesn't matter whether Piaget's stages are valid in all details". His research shows "...

There are stages in intellectual and behavioral development which can be identified as part of the development progress of the child, and that the time span of these stages runs in parallel with the time span of the development of the adult brain" (Rose, 1976, p. 201-202)

Brain research, a new field of study, shows that the pattern of development varies with individual children and their environmental circumstances. Virtually nothing is known about changes; perhaps only very subtle changes, that occur from late childhood, puberty, and adulthood. (Rose, 1976, p. 146-197).

Cognitive learning style research demonstrates there are many different learning styles (Messick). Although the basic research has been done with children and young adults Even (p. 63) believes the concept of cognitive learning can be applied to adults.

Summary

Individual research projects reviewed for this project do not permit an integrated holistic summary. They provide important but unrelated data. As a result a brief summary of some of these studies is in Appendix A.

In exploring the research to discover whether adults and children learn differently it becomes apparent that:

1) These two categories (philosophical/practitioner and empirical) are discrete entities with very little effort being made to integrate the data from both into a meaningful whole.
2) The question of whether adults learn differently than children is not seriously examined. It is simply a basic assumption that is taken for granted by adult educators and an assumption that other educators and researchers do not consider.

CONCLUSIONS

The research data concerning the differences and similarities of adult and child learning is unclear, contradictory and frequently has serious methodological problems. It is not feasible at this time to provide a definitive answer as to whether adults and children learn differently.

Data from the philosophical/practitioner research category clearly claim that adults do learn differently. Although this researcher has heard a number of professionals and students raise questions about these findings it is interesting to note that we did not find evidence they have put their ideas down for others to scrutinize. We wonder why!

The empirical research data are not conclusive. Some research demonstrates that adults learn like children, other research data refute this position. (See Appendix A.) Even when you make interpretive adjustments for methodological problems the end result is confusing and unclear. In spite of methodological and other limitations, there is sufficient empirical research evidence to question the data in the philosophical/practitioner category.

We find it significant that research and publications dealing with child learning do not claim that their knowledge about learning is applicable only to children. They imply and occasionally state that knowledge about learning is applicable to learners at all ages.

A New Hypothesis

In the tradition of scientific research a new hypothesis related to adult and child learning needs to be considered. Present data strongly suggest learning is a gradual sequential process evolving over the life span of an individual. (Birren in Jarvik,et al, p. 149) Therefore, we propose a more appropriate hypothesis for adult educators, as well as other educators, is: The learning process gradually changes over the full range of the life cycle of an

individual.

This hypothesis is consistent with the basic principle that human growth and development is a natural evolutionary process beginning at conception and ending at death. Birren and Woodruff (Baltes and Schaie, p. 307-308) state that development is

> "...the processes whereby the individual goes from a less differentiated to a more differentiated state, from complex to a more complex organism, from a lower or early stage to a higher or later stage of an ability, skill, or trait."

In other words, an individual gradually moves from a state of lower to higher development. Lerner (1976, p. 155) stresses it is important to understand how an individual develops before trying to understand how groups of people develop.

Since there are no precise demarcation points in human growth it is logical that the learning process does not change at the time a child becomes an adult. On this basis an adult or child learner should not be considered a separate species - he is a unique person in a constant state of growing, developing, and changing.

It is important to recognize the aging process is unique to each individual. The process is controlled by physiological, psychological, and sociological variables. Kanin (p. 30) says:

> "The species has reproduced itself billions & billions of times, yet there have never been two human beings exactly alike. We grow at varying speeds, reaching various heights. We are fat, thin, too thin, too fat, astigmatic, bald, mechanically inclined, or all thumbs, coordinated or clumsy, quick to learn or slow; in short, we are individuals."

In keeping with Botwinick's (p. 48-50) idea of cognitive and non-cognitive factors, it appears a thorough exploration of the noncognitive factors would add materially to the knowledge about adult learning. Such an analysis would provide cognitive researchers data to use in separating these two interrelated

factors. Eisdorfer (Jarvik, et al, p. 125-126) and Birren (Jarvek, et al, p. 151) stressed the importance of studying the biological influences on learning as well as environmental and social factors. Uria (p. 163) introduces another point when he says:

> "...sociohistorical shifts not only introduce new content into the mental world of human beings; they also create new forms of activity and new structure of cognitive functioning."

Accepting this hypothesis creates another problem. This could give educators the license to teach all people in the same manner. This would be as wrong as saying adults and children learn differently.

Another trend in the literature worth noting is that the differences in learning appear to be greater between individual learners whether they are adults or children than between any age group. (Lerner) Based on the evidence in this research project more attention needs to be given to this idea.

It is our experience that effective teachers of learners of all ages treat each learner as a unique individual, and therefore, design learning experiences based on individual differences (physiological, sociological, psychological) rather than just the age of their learners. Differences once thought generic to our age group may be more related to the learning task (Hultch, et al., p. 245).

Recommendations

More empirical research related learning in all stages of the life cycle, however, in conducting scientific research it is important that researchers ask the right questions. It just may be that adult educators have been looking at the wrong questions in an attempt to unravel the mysteries of how adults learn. Birren (Jarvek, et al, p. 151) says:

> "investigators must know what to look for so as not to be distracted by inconsequential details."

This review of literature supports his contention. It appears that

investigators have not dealt with the substantive issues in learning - especially as learning relates to differences between child and adult learning.

If the proposed hypothesis is correct, a new approach to the data in learning is needed. Instead of isolating learning data on the basis of whether the learner is an adult or a child, existing learning research data need to be reanalyzed to discover if learning patterns exist as an individual moves through the life cycle. This reexamination of data is needed as a forerunner to more extensive research related to learning throughout the life cycle.

There is, also, a need to relate existing psychological research to the world of practitioners. As has been stated, this type of research is heavily laden with jardon and is not easily interpreted into language that is understood by teachers and administrators.

Another area needing attention has been proposed by J. Roby Kidd. He speculates "there will be gains for adult learners from the natural sciences in greater measure than from the social sciences." (1977, p. 28-29) Just as with work being done in the social sciences, there is no single theory that explains learning - either adult or child. The research being done deals with a wide range of phenomena.

> "...the effect of certain chemicals is expanding the consciousness and recalling stored information, the significance of diet and the effect of nutrition on rate of metabolism and oxidation, which in turn result in avoiding or enhancing emotional stress and learning potential, and the exciting and frightening marvels being discovered from brain research." (Kidd, 1977, p. 29)

Research dealing with this aspect of learning is relatively new and highly suggestive. It is however, an area where new data may provide clues to how adults and children can learn more effectively and efficiently. Adult educators need to monitor this research and identify practical applications.

Perhaps now, more than any other time, all educators need to work closely

together. All will gain from a cooperative and collaborative investigation of the learning process and the practical application of the knowledge gained. Each facet has much to contribute. Adult education has the emphasis on the total individual (physiologically, sociologically, psychologically) which can add a stronger dimension to the study of learning. From elementary and secondary education the concepts of cognitive development and learning disabilities could provide new insights into the learning of adults. The strengths of all fields could be combined to improve the total educational system and bring the joy and satisfaction of learning to more learners.

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Appendix A

Selected Empirical Research which Compares Adult and Child Learning

Nicholas J. Esposito - Effect of Dimensional Preference on Adult Shift Learning: Some Developmental Implications

Adults showed the same type of behavior previously thought to characterize children's discrimination shift learning. The same principles that guide children's shift behaviors seem to guide adults' shift behavior.

Rosslyn Gaines - Developmental Assessment of Pattern Detection of Matrices

Adults were better than children in identifying form and color matrices.

M. A. Middleton and W. G. Davenport - Effect of Age on Utilization of Prior and Subsequent Context in Expectancy Restoration

Children (6-16) utilized information from a prior context to a significant degree. Middle aged people (19-45) used prior and subsequent context and older people (45-72) utilized subsequent context.

Marlene Scardamalia - Information Processing Capacity and the Problem of Horizontal Decalage: A Demonstration Using Combinatorial Researching Tasks

Adults performed worse than younger subjects on easier tasks and better on hardest tasks.

Sandra S. Smiley - Optional Shift Behavior as Function of Age and Dimensional Dominance

Developmental differences in optional shift behavior occur only when a nondominant dimension is relevant and the nondominant dimension irrelevant.

Barbara Tversky - Pictorial and Verbal Encoding in Preschool Children

Pictorial and verbal encoding of preschoolers resembles that of adults.

Richard D. Walk, Kathryn Karusaitis, Caroline Lebowitz and Toni Falbo - Artistic style as Concept Formation for Children and Adults

Artistic style differentiation increased with age. Strong developmental trends were evident.